

REMARKS

As an initial clerical matter, Applicant has amended Claim 1 to correct for some minor spelling errors, and language inconsistencies. These amendments were made in addition to the substantive changes made to that claim, which are discussed in detail below.

Applicant would like to thank the Examiner for the consideration granted, and time taken in the personal interview conducted on August 28, 2002. At that interview, the details of Claim 1 were discussed with respect to U.S. Patent No. 5,883,704, issued to Nishi et al (Nishi '704). Specifically, Applicant addressed the significant differences between rotationally symmetric, and non-rotationally symmetric systems, and how the structures used in a rotationally symmetric system could not operate effectively within a rotationally non-symmetric system. Further, the Examiner appeared to also agree that, given the significant differences between rotationally symmetric and non-rotationally symmetric systems, it would not be obvious to one of ordinary skill in the art to apply the teachings of a rotationally symmetric system, such as Nishi '704, to a non-rotationally symmetric system, as claimed in the present invention.

Accordingly, Applicant has amended Claim 1 above to clarify that the chamber of the present invention is configured in a non-rotationally symmetric way, and that the control device for the pressure of the fluid filling adjusts and maintains the image properties of the optical element. Together these elements enable the device claimed in Claim 1 to alter the non-rotationally symmetric image properties of the image system by changing the fluid pressure.

As can be seen from the above, the presently claimed invention is directed towards the correction and maintenance of non-rotationally symmetric image properties. The chamber and the imaging properties are both specifically labeled as non-rotationally symmetric in Claim 1. Such a device is not taught, disclosed or suggested by the disclosure in Nishi '704. Nishi '704

teaches a device that only addresses rotationally symmetric imaging properties. To that end, Applicants include herein a signed affidavit from Dr. Arthur Hoegele, who is a team manager and senior scientist with Carl Zeiss SMT AG in Germany. Carl Zeiss SMT AG is a worldwide leader in the production of optical elements and devices for those elements. After reviewing the disclosure in Nishi '704, Dr. Hoegele has stated that it is his expert conclusion that all of the imaging characteristics and structures disclosed in Nishi '704 apply solely to rotationally-symmetric systems. Further, Dr. Hoegele clarified that rotationally-symmetric systems and non-rotationally symmetric systems are, in a sense, non-analogous art because the "imaging characteristics of a rotationally symmetric system differ greatly from the imaging characteristics of a rotationally non-symmetric one, and thus one of ordinary skill in the art would not look to the teachings of Nishi '704 . . . to solve the imaging aberration problems of a rotationally non-symmetric system." (Affidavit, Page 5, Para. 17). Thus, the teachings of Nishi '704 would never be applied to the present invention by one of ordinary skill in the art.

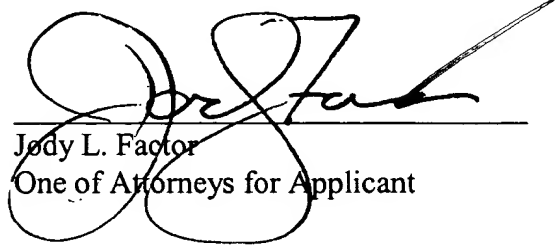
As the now amended Claim 1 clearly states that its chamber is rotationally non-symmetric, and that the control device is capable of adjusting and controlling rotationally non-symmetric image properties, Claim 1 is not taught, disclosed or even suggested by Nishi '704, and should be in condition for allowance. Further, as the remaining claims in the application, namely Claims 2-24, all depend from Claim 1, they include all of the limitations of that claim, and should therefore also be deemed allowable. Accordingly, reconsideration and passage to allowance of Claims 1-24 is respectfully requested.

Should anything further be required, a telephone call to the undersigned, at (312) 226-1818, is respectfully invited.

Respectfully submitted,

FACTOR & PARTNERS, LLC

Dated: December 20, 2002

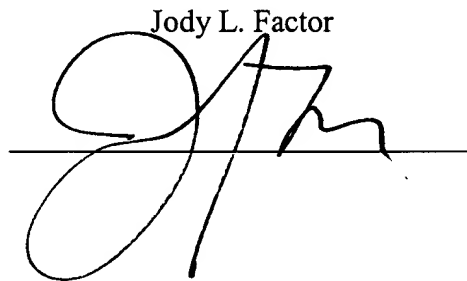


Jody L. Factor
One of Attorneys for Applicant

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on December 20, 2002.

Jody L. Factor



AMENDED CLAIMS WITH MARKINGS TO SHOW CHANGES

1. An optical system, in particular projection exposure system for [microlithography]
microlithography, in particular having a slot-shaped image field or non-rotational-symmetric illumination,
 - a) having an optical element comprising at least one chamber that is sealed from atmospheric pressure and is enclosed by boundary surfaces and that has a fluid filling, wherein at least one of the boundary surfaces is exposed at least partially by illumination light;
 - b) having a fluid source that has a fluid connection to the chamber via a fluid supply line; and
 - c) having a control device for the pressure of the [liquid] fluid filling to adjust and maintain the image properties of the optical element;

wherein

the at least one enclosed chamber is configured in a non-rotationally symmetric way such [a way] that a change in the fluid pressure inside the at least one chamber results in a change in non-rotational-symmetric imaging properties of the optical element that have an n-fold symmetry relative to the optical axis of the optical element, where n is greater than 1.